

Title (en)  
GRANULAR THIN MAGNETIC FILM AND METHOD OF MANUFACTURING THE FILM, LAMINATED MAGNETIC FILM, MAGNETIC PART, AND ELECTRONIC DEVICE

Title (de)  
"GRANULARER DÜNNER MAGNETFILM UND VERFAHREN ZUR HERSTELLUNG DES FILMS, LAMINierter MAGNETFILM, MAGNETISCHES TEIL UND ELEKTRONISCHES BAUELEMENT"

Title (fr)  
FILM MAGNETIQUE FIN GRANULAIRE ET PROCEDE DE REALISATION DU FILM, FILM MAGNETIQUE LAMINE, PIECE MAGNETIQUE ET DISPOSITIF ELECTRONIQUE

Publication  
**EP 1361586 A1 20031112 (EN)**

Application  
**EP 02715778 A 20020117**

Priority

- JP 0200278 W 20020117
- JP 2001010839 A 20010118
- JP 2001145891 A 20010516

Abstract (en)  
There are provided a magnetic thin film utilizing a granular film and having excellent high frequency characteristics and a method of manufacturing the same, and a multilayered magnetic film and magnetic components and electronic equipment utilizing the same. <??>A nonreactive sputtering is performed so that there is no oxidation of a magnetic metal, and a saturation magnetization is increased to increase a resonant frequency of permeability. Also, a multi-target simultaneous sputtering is combined with the nonreactive sputtering so that in a granular structure including magnetic grains and an insulating layer a size of the magnetic grains and a thickness of the insulating layer are optimized thereby ensuring a proper magnitude for a crystalline magnetic anisotropy within the grains and excellent soft magnetic properties. Further, the optimization of the thickness of the insulating layer has the effect of improving a resistivity, decreasing an eddy current and improving an exchange interaction between the magnetic grains. <IMAGE>

IPC 1-7  
**H01F 10/20**; **H01F 41/18**

IPC 8 full level  
**H01F 10/00** (2006.01); **H01F 10/32** (2006.01); **H01F 41/18** (2006.01); **H01F 41/30** (2006.01); **H05K 9/00** (2006.01); **H01F 10/13** (2006.01)

CPC (source: EP US)  
**B82Y 25/00** (2013.01 - EP US); **B82Y 40/00** (2013.01 - EP US); **H01F 10/007** (2013.01 - EP US); **H01F 10/138** (2013.01 - EP US); **H01F 10/3227** (2013.01 - EP US); **H01F 41/183** (2013.01 - EP US); **H01F 41/301** (2013.01 - EP US); **H05K 9/0084** (2013.01 - EP US); **H01F 10/132** (2013.01 - EP US); **Y10T 428/12493** (2015.01 - EP US); **Y10T 428/12535** (2015.01 - EP US); **Y10T 428/12611** (2015.01 - EP US); **Y10T 428/12618** (2015.01 - EP US); **Y10T 428/3183** (2015.04 - EP US); **Y10T 428/32** (2015.01 - EP US)

Cited by  
CN110362909A; EP1734542A4

Designated contracting state (EPC)  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)  
**US 2003091846 A1 20030515**; EP 1361586 A1 20031112; EP 1361586 A4 20080611; JP 4758599 B2 20110831; JP WO2002058086 A1 20040527; US 2004209098 A1 20041021; US 2004209111 A1 20041021; US 7060374 B2 20060613; US 7498088 B2 20090303; WO 02058086 A1 20020725

DOCDB simple family (application)  
**US 22186902 A 20020917**; EP 02715778 A 20020117; JP 0200278 W 20020117; JP 2002558287 A 20020117; US 84244904 A 20040511; US 84247304 A 20040511